AUA-1411
DuoConnect for Notebooks

User's Guide

adaptec®

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Federal Communications Commission Radio Frequency Interference Statement

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. However, if this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

■ Reorient or relocate the receiving antenna.
■ Increase the separation between equipment and receiver.
■ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
■ Consult the dealer or an experienced radio/television technician for help.
■ Use a shielded and properly grounded I/O cable and power cable to ensure compliance of this unit to the specified limits of the rules.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Adaptec, Inc.   AUA-1411

FC Tested to Comply
With FCC Standards

FOR HOME OR OFFICE USE

European Union Compliance Statement

This Information Technology Equipment has been tested and found to comply with EMC Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, in accordance with:

■ EN55022 (1998) Emissions

■ EN55024 (1998) Immunity:
  – EN61000-4-2 (1998) Electrostatic discharge: ±4 kV contact, ±8 kV air
  – EN61000-4-3 (1998) Radiated immunity
  – EN61000-4-4 (1995) Electrical fast transients/burst: ±1 kV AC, ±0.5 kV I/O
  – EN61000-4-5 (1995) Surges ±1 kV differential mode, ±2 kV common mode
  – EN61000-4-6 (1996) Conducted immunity: 3 V
  – EN61000-4-11 (1994) Supply dips and variation: 30% and 100%

In addition, all equipment requiring U.L. listing has been found to comply with EMC Directive 73/23/EEC as amended by 93/68/EEC in accordance with EN60950 with amendments A1, A2, A3, A4, A11.

Australian/New Zealand Compliance Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to the Australian/New Zealand standard AS/NZS 3548 set out by the Spectrum Management Agency.

Canadian Compliance Statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Japanese Compliance (Voluntary Control Council Initiative)

This equipment complies to class B Information Technology equipment based on VCCI (Voluntary Control Council for Interface). This equipment is designed for home use but it may causes radio frequency interference problem if used too near to a television or radio. Please handle it correctly per this documentation.

In this Guide

Getting Started

This *User's Guide* explains how to install your AUA-1411 DuoConnect^{TM} for Notebooks adapter and its associated drivers. It describes how to connect your AUA-1411 to a USB device and a digital video camera, and contains an overview of USB and 1394 (FireWire^{TM}) technology.

Kit Contents

Your DuoConnect for Notebooks kit includes:

- Adaptec AUA-1411 DuoConnect for Notebooks adapter

- 6-foot FireWire cable

- DuoConnect for Notebooks CD containing device drivers, software, and the *DuoConnect for Notebooks User's Guide*

- *Adaptec DuoConnect for Notebooks Installation Guide*

System Requirements

To use your DuoConnect for Notebooks adapter, you need a PC-compatible notebook computer with:

- Pentium II processor or equivalent (400 MHz or faster)

- Microsoft Windows® 98SE, Microsoft Windows 2000®, Windows Me®, or Windows XP®

- Available CardBus slot

- CD-ROM or DVD-ROM drive

Installation Overview

⚠️ **Caution:** *Do not* insert the DuoConnect for Notebooks adapter into your computer before you install the Adaptec USB CardBus Plug-in. See page 4 for detailed instructions.

You install your DuoConnect for Notebooks in four simple steps:

1 Install the Adaptec USB CardBus Plug-in—*Windows XP and Windows 2000 only.* (See page 4.)

2 Insert the DuoConnect for Notebooks adapter. (See page 5.)

3 Install the device drivers. (See page 6.)

4 Connect your devices. (See page 21.)

✓ **Note:** Optional software utilities are included on the DuoConnect for Notebooks CD. Insert the CD and follow the on-screen instructions to install the ones you want.

Installing the Adaptec USB CardBus Plug-in

(Windows XP and 2000 *only*)

If you are running Windows XP or Windows 2000 on your notebook computer, you *must* install the Adaptec USB CardBus Plug-in software before you insert the DuoConnect for Notebooks adapter.

⚠️ **Caution:** *Do not* insert the DuoConnect for Notebooks adapter into your computer before you install the Adaptec USB CardBus Plug-in.

To complete the installation:

1 Insert the DuoConnect for Notebooks CD.

   The Autorun menu opens automatically. (If the menu does not open, go to Windows Explorer and choose **autorun.exe** from the DuoConnect for Notebooks CD.

2 Click **Install Software**, then select **USB CardBus Plug-in**.

3 When the installation is complete, click **OK** to restart your computer.

Inserting the Adapter

To successfully install your DuoConnect for Notebooks adapter:

1 Disconnect any devices that are connected to the adapter.

2 Carefully insert the adapter into the CardBus slot of your computer, as shown.

3 Insert the DuoConnect for Notebooks CD into your CD-ROM drive, if you haven't done so already.

Installing the Device Drivers

The DuoConnect for Notebooks adapter contains four controllers. One driver is installed for each controller. When successfully installed, these controllers are displayed separately in the Windows Device Manager.

Controller Type	Number of Controllers	Description
USB 1.1	2	NEC USB Open Host Controller
USB 2.0	1	Adaptec AUA-1411 CardBus to USB Enhanced Host Controller (See Note below.)
FireWire	1	Texas Instruments OHCI-compliant IEEE 1394 Controller

Note: *Windows XP and 2000 users only*—If your operating system is updated with the latest Microsoft service pack, Microsoft USB 2.0 drivers will be installed instead of the Adaptec USB 2.0 drivers.

Follow the instructions for your operating system:

Windows XP

> **Note:** If your operating system is updated with the latest Microsoft service pack, Windows recognizes the new hardware and automatically installs the necessary drivers. Your installation is complete.

If your operating system is not updated with the latest Microsoft service pack, Windows recognizes the new hardware and automatically opens the Found New Hardware Wizard.

To complete the driver installation:

1 Select **Install the software automatically...**, then select **Next**.
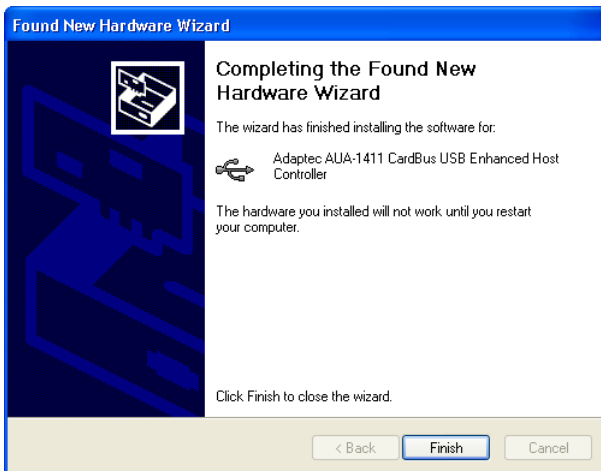
2   Click **Continue Anyway**.

> 📇 **Note:** Adaptec drivers have been fully tested and certified to work with the AUA-1411 card.

3   When the installation is complete, click **Finish**.

4   If you are prompted to restart your computer, click **Yes**.

Verifying Driver Installation

To verify that the drivers are installed:

1   Right-click the **My Computer** desktop icon, select **Properties**, click the **Hardware** tab, then click the **Device Manager** button.

2   Expand **IEEE 1394 Bus host controllers** and **Universal Serial Bus controllers** and verify that the drivers called-out below appear.
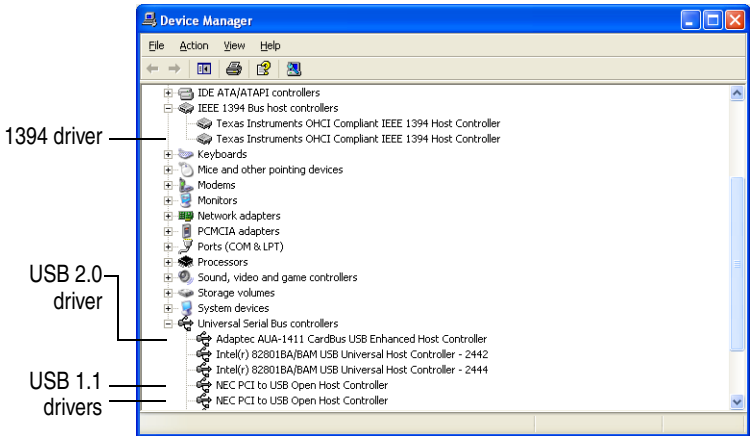
> ⚠ **Note:** If you are using Microsoft's USB 2.0 drivers, they will appear under Universal Serial Bus controllers instead of Adaptec's USB 2.0 drivers, as shown in the next Figure.
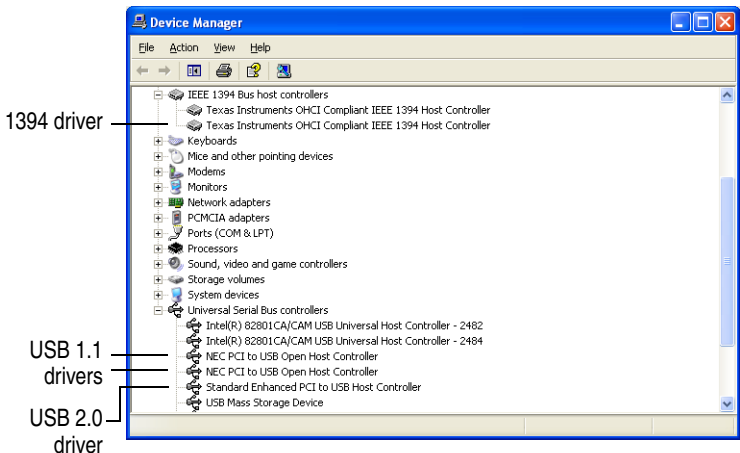
Windows 2000

> **Note:** If your operating system is updated with the latest Microsoft service pack, Windows recognizes the new hardware and automatically installs the necessary drivers. Your installation is complete.

If your operating system is not updated with the latest Microsoft service pack, Windows recognizes the new hardware and automatically opens the Found New Hardware Wizard.
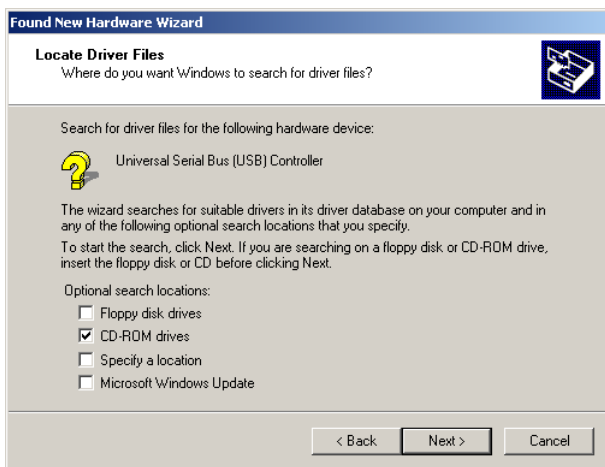
To complete the installation:
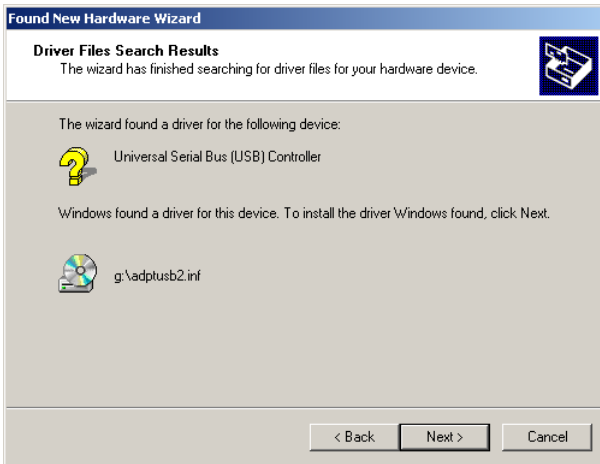
1 Click **Next**.

2 Select **Search for a suitable driver...**, then click **Next**.

Found New Hardware Wizard

Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.

This wizard will complete the installation for this device:

Universal Serial Bus (USB) Controller

A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.

What do you want the wizard to do?

⦿ Search for a suitable driver for my device (recommended)

○ Display a list of the known drivers for this device so that I can choose a specific driver

< Back   Next >   Cancel

3 Select *only* **CD-ROM drives**, then click **Next**.

Found New Hardware Wizard

Locate Driver Files
Where do you want Windows to search for driver files?

Search for driver files for the following hardware device:

Universal Serial Bus (USB) Controller

The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.

To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.

Optional search locations:
☐ Floppy disk drives
☑ CD-ROM drives
☐ Specify a location
☐ Microsoft Windows Update

< Back   Next >   Cancel

4 Click **Next**.

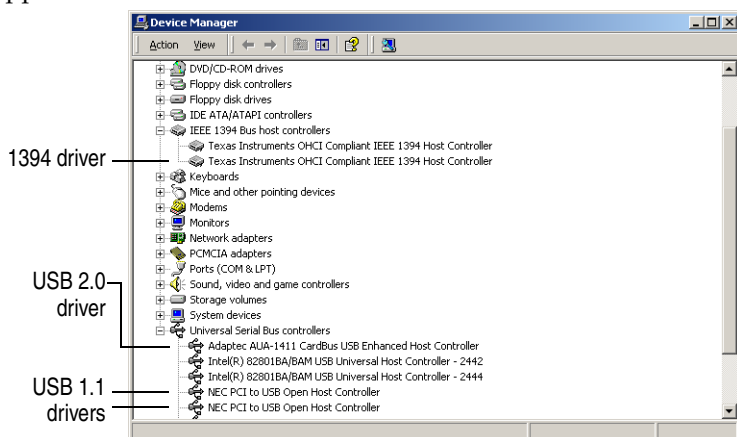**5** When the installation is complete, click **Finish**.

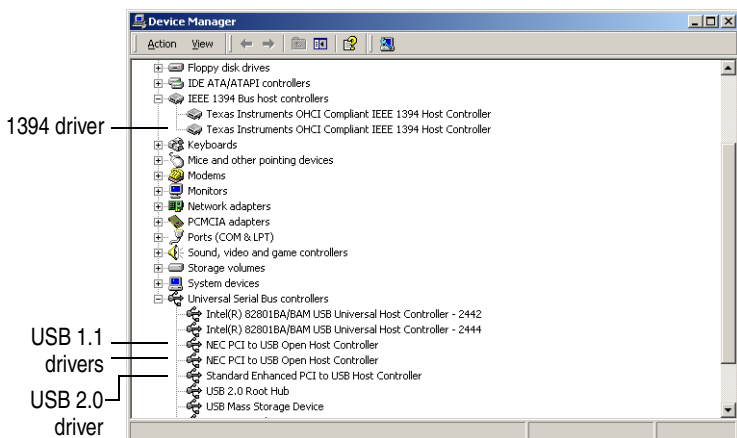**6** Restart your computer if prompted to do so.

Verifying Driver Installation

To verify that the drivers are installed:

1 Right-click the **My Computer** desktop icon, select **Properties**, click the **Hardware** tab, and click the **Device Manager** button.

2 Expand **IEEE 1394 Bus host controllers** and **Universal Serial Bus controllers** and verify that the drivers called-out below appear.

▲ **Note:** If you are using Microsoft's USB 2.0 drivers, they will appear under Universal Serial Bus controllers instead of Adaptec's USB 2.0 drivers, as shown in the next Figure.

Windows Me

Windows recognizes the new hardware and automatically opens the Found New Hardware Wizard.

To complete the driver installation:

1 Select **Automatic search for a better driver...**, then click **Next**.

**2** When the installation is complete, click **Finish**.

3 Restart your computer if prompted to do so.

Verifying Driver Installation

To verify that the drivers are installed:

1 Rick-click the **My Computer** desktop icon, select **Properties**, then click the **Device Manager** tab.

2 Select **View devices by type**.

3 Expand **1394 Bus Controllers** and **Universal Serial Bus controllers** and verify that the drivers called-out below appear.
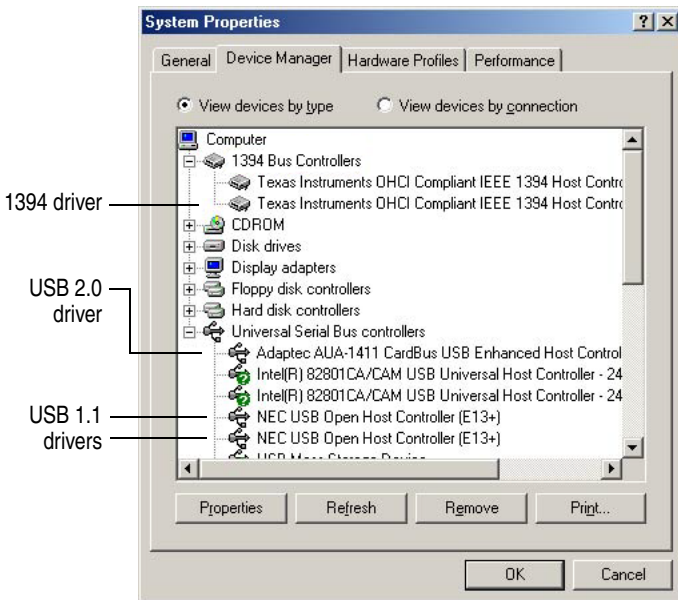
Windows 98 SE

These instructions guide you through the installation of 1394, USB 1.1, and USB 2.0 drivers. These drivers are installed in sequence, not all at the same time. Follow these instructions to ensure that all drivers are installed correctly.

Note: You may need the Windows 98SE CD during installation.

Windows recognizes the new hardware and automatically opens the Found New Hardware Wizard.

To complete the installation:

1 Click **Next**.

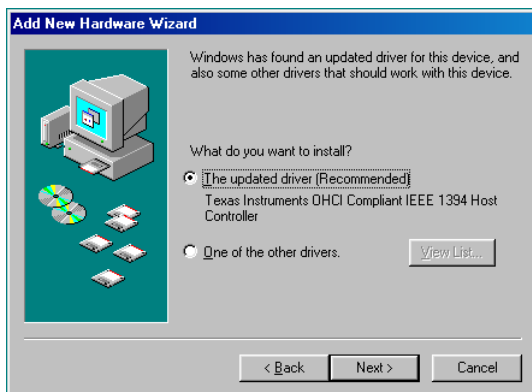**2** Select **Search for the best driver...**, then click **Next**.

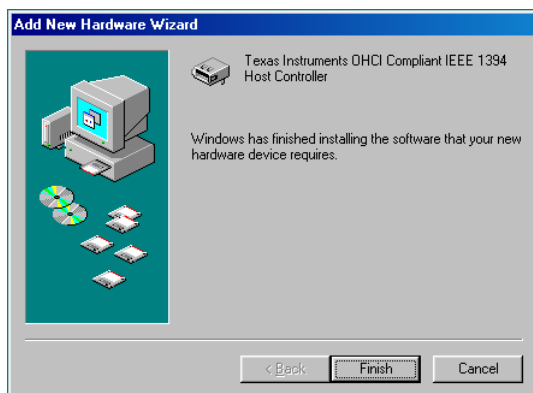**3** Deselect all options, then click **Next**.

4 Select **The updated driver...**, then click **Next**.

5 Click **Next**.

6 Click **Finish**.

The 1394 driver installation is complete. The Add New Hardware Wizard reopens.

7 Repeat Step 1 to Step 6.

The first USB 1.1 driver installation is complete. The Add New Hardware Wizard reopens.

8 Repeat Step 1 to Step 6 again.

The second USB 1.1 driver installation is complete. The Add New Hardware Wizard reopens.

9 Click **Next**.

10 Click **Search for the best driver...**, then click **Next**.

11 Ensure that your DuoConnect for Notebooks CD is in your CD-ROM drive, then select **Specify a location**, type the drive letter of your CD-ROM drive, and click **Next**.

> **Note:** Your CD-ROM drive letter may be different from the one shown in the example.

**12** Click **Next**, then click **Finish**.

The USB 2.0 driver installation is complete.

13 Restart your computer when prompted.

Verifying Driver Installation

To verify that the drivers are installed:

1 Right-click the **My Computer** desktop icon, select **Properties**, and click the **Device Manager** tab.

2 Select **View devices by type**.

3 Expand **1394 Bus Controllers** and **Universal Serial Bus controllers**. Verify that the drivers called-out below appear.
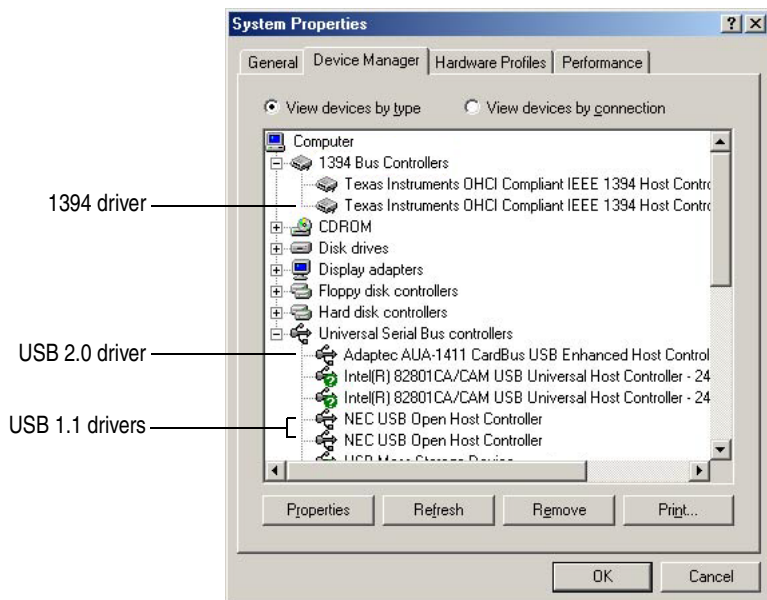
Connecting Devices

You can connect standard USB 1.1 and high-speed USB 2.0 devices to your DuoConnect for Notebooks adapter. To ensure proper functioning, Adaptec recommends using only standard USB cables with a maximum length of 6 feet (2 meters).

Hard disk drive connected
with a USB cable
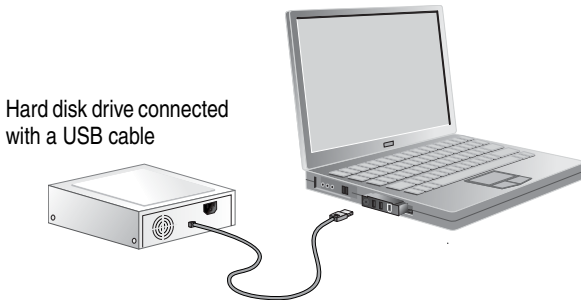
You can also connect FireWire devices to your DuoConnect for Notebooks adapter, as discussed in *Hot-plugging on page 23*. Use standard FireWire cables to connect your FireWire devices. One 6-foot FireWire cable is included in your DuoConnect for Notebooks kit.

High-quality USB and FireWire cables are available for sale on the Adaptec Web site at www.adaptec.com.

> **Note:** *Windows 98SE users only*—When you connect a USB 2.0 storage device (like a CD-ROM drive or hard disk drive), a driver Installation Wizard may appear. If it does, refer to your device's documentation for help installing the USB 2.0 drivers for your device.
> If you don't install the USB 2.0 drivers for your device, your device either will not work or will operate at USB 1.1 speeds.

External Power Source

You may need to connect an external power source to the DuoConnect for Notebooks adapter if you are connecting it to multiple USB devices with varying power requirements, or FireWire devices that do not have their own power supply.

If necessary, use a UL-approved power supply rated at 12 Volts and capable of 2.1 Amps, with connector size 3.5 mm outside/1.3 mm inside diameter, 8 mm length. Refer to your device's documentation for other power requirements.

Connecting a Digital Video Camera

Two types of FireWire connectors are commonly used: a 4-pin and a 6-pin. The DuoConnect for Notebooks adapter contains two 6-pin connectors; digital video cameras use 4-pin connectors. To connect a digital video camera to your DuoConnect for Notebooks adapter, use the 6-to-4 pin FireWire cable included in the kit.

To connect a digital video camera:

1 Connect the 6-pin connector end of the FireWire cable to the FireWire port on your DuoConnect for Notebooks adapter.

4-pin connector
into camera

6-pin connector into
DuoConnect for Notebooks adapter
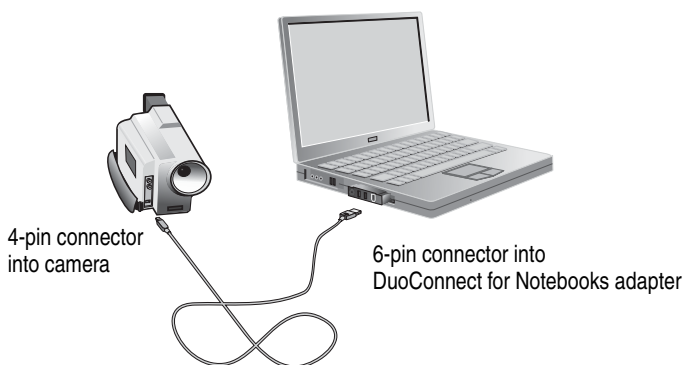
2 Carefully insert the smaller, 4-pin connector end of the FireWire cable into the FireWire port on your digital video camera.
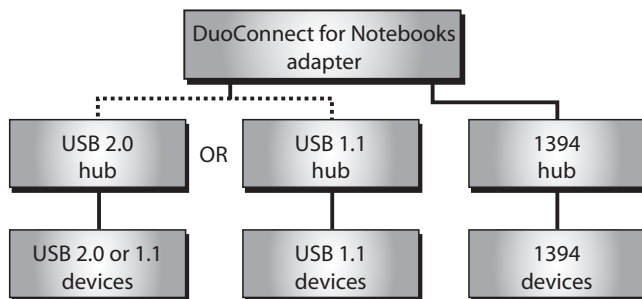
⚠ **Caution:** Ensure that the connector and the port are properly aligned to avoid bending and damaging the pins in the port.

Connecting Multiple Devices

You can connect multiple USB and FireWire (1394) devices to your DuoConnect for Notebooks adapter by using *hubs*, as shown. (A hub works with a computer like a power strip works with an electrical outlet—it multiplies the number of ports you have so that you can have more devices plugged in at the same time.)

```
                    ┌─────────────────────────┐
                    │  DuoConnect for Notebooks│
                    │         adapter          │
                    └─────────────────────────┘

  ┌──────────────┐   OR   ┌──────────────┐   ┌──────────────┐
  │   USB 2.0    │        │   USB 1.1    │   │    1394      │
  │     hub      │        │     hub      │   │     hub      │
  └──────────────┘        └──────────────┘   └──────────────┘

  ┌──────────────┐        ┌──────────────┐   ┌──────────────┐
  │ USB 2.0 or 1.1│       │   USB 1.1    │   │    1394      │
  │   devices    │        │   devices    │   │   devices    │
  └──────────────┘        └──────────────┘   └──────────────┘
```

> **Note:** You can connect USB 2.0 devices to a USB 1.1 hub, but they will run at USB 1.1 speed. See *About USB Technology on page 26* for more information.

High-quality USB 2.0 hubs are available for sale on the Adaptec Web site at www.adaptec.com.

Hot-plugging

Your AUA-1411 adapter supports hot-plugging, so you can connect and disconnect your devices while your computer is running.

> **Caution:** Some devices (like CD-ROM drives and hard disk drives) must be stopped, using the Unplug or Eject Hardware icon, before they are unplugged. Refer to your device's documentation for more information.

Device manufacturers support hot-plugging in different ways. Refer to your devices' documentation for connection recommendations.

> **Note:** If you move a device from one adapter connector to another, your operating system may initiate a new hardware installation process. Refer to the Readme file for details.

Removing the Adapter

You must use the Unplug or Eject Hardware Wizard to properly disconnect your DuoConnect for Notebooks adapter from your computer.

To disconnect the adapter:

1 Stop and disconnect all devices connected to the adapter. (Refer to your devices' documentation for instructions, if required.)

2 Click the **Unplug or Eject Hardware Wizard** icon (shown at right) on your system tray, which is in the bottom right corner of your screen.

3 Click **Texas Instruments OHCI Compliant IEEE 1394 Host Controller**, then click **Stop**.

Your system stops all four controllers on your DuoConnect for Notebooks adapter. A message appears telling you that the device has been stopped.

4 Click **OK**.

It is now safe to remove your DuoConnect for Notebooks adapter.

Troubleshooting

If you encounter difficulties while installing or using the DuoConnect for Notebooks adapter, check the following:

■ Is your device powered on?

■ Is the cable properly connected to the DuoConnect for Notebooks adapter and the device?

■ Is the adapter seated evenly in the PC Card slot?

■ Is the driver loaded properly? See page 6 to refer to the installation verification instructions provided for your operating system.

■ Ensure that you have the proper drivers for your USB and FireWire devices installed. Refer to each device manufacturer's Web site for the latest available drivers.

■ Are your drivers current? Check www.adaptec.com for the latest driver availability.

■ If you encounter any problems with the software utilities, check the Readme file on the CD.

For more troubleshooting information, visit www.adaptec.com or search the Adaptec Support Knowledgebase at ask.adaptec.com.

About USB Technology

USB stands for Universal Serial Bus. It is the interface between your computer and the USB devices you plug into it. Your computer communicates with USB devices through the USB interface.

About USB Devices

USB devices can be plugged into USB ports only, and must be supported by USB drivers.

USB 1.1 devices operate at a maximum speed of 12 Mbps (Megabits per second); USB 2.0 devices operate at a maximum speed of 480 Mbps.

USB 1.1 and USB 2.0 devices can be used simultaneously on the same computer (see the next section).

Combining USB 1.1 and USB 2.0 Devices

You can use USB 1.1 and USB 2.0 hubs and devices simultaneously on the same system, though some connection limitations exist:

■ For optimum performance, connect USB 2.0 devices and hubs to USB 2.0 adapters. USB 2.0 devices and hubs are limited to USB 1.1 speeds if they are connected to USB 1.1 adapters.

■ USB 1.1 devices and hubs cannot operate at USB 2.0 speeds even when connected to a USB 2.0 hub or adapter.

■ Connecting both USB 1.1 and USB 2.0 devices to the same hub or adapter will neither slow down your USB 2.0 devices nor speed up your USB 1.1 devices.

How Many USB Devices Can I Connect?

Technically, it is possible to connect 127 separate USB devices to your computer. Realistically, however, USB and device limitations mean that the maximum number of devices you can plug in at once is less than 127. (Exact limits depend on the type of devices and hubs you are using.)

About 1394 Technology

1394 (also known as FireWire or i.LINK) is an international standard data transfer protocol created by Apple Computer, Inc. and ratified by the International Standards Organization as IEEE 1394. It is a series of standardized commands for moving data from one device to another.

1394 offers advantages that make it ideal for use with audio and video devices:

■ It's fast. It has 100/200/400 Mbps, or 12.5/25/50 MBps data transfer rates.

■ It features both isochronous (guaranteed bandwidth, ensuring full-frame, full motion video, and CD-quality audio) and asynchronous data transfers.

■ It is hot-pluggable (meaning you can connect and disconnect DV devices without rebooting your computer), and has no need for terminators or device IDs.

■ It supports up to 62 devices (16 daisy-chained) with a 4.5-m flexible cable between devices over a total length of up to 72 meters or 240 feet.

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